Install Compressors to Capture Casinghead Gas

NaturalGas EPA POLLUTION PREVENTER

Partner Reported Opportunities (PROs) for Reducing Methane Emissions

PRO Fact Sheet No. 702

Applicable sector(s):

- ■ Production
- ☐ Processing
- ☐ Transmission and Distribution

Partners reporting this PRO: Pioneer Natural Resources USA, Inc.

Other related PROs: Connect Casing to Vapor Recovery Unit, Install Flares

Compressors/Engines	☐
Dehydrators	☐
Pipelines	☐
Pneumatics/Controls	☐
Tanks	☐
Valves	☐
Wells	■
Other	☐

Technology/Practice Overview

Description

Casinghead gas collects in the annular space between the tubing and casing of an oil well. Typically casinghead gas is vented to the atmosphere when the wellhead pressure drops below gas sales line pressure. If the well produces sufficient casinghead gas, it may be economical to collect this gas for sale, instead of emitting it. One partner reported installing compressors to capture casinghead gas, and pump it into a sales gas pipeline.

Operating Requirements

Sufficient gas and electricity at wellhead.

Applicability

Oil wells that produce significant volume of casinghead gas.

Methane Savings: 32,850 Mcf per year

Costs

Capital Costs (including installation)

☐ <$1,000 ☐ $1,000 – $10,000 ■ >$10,000

Operating and Maintenance Costs (annual)

☐ <$100 ☐ $100-$1,000 ■ >$1,000

Payback (Years)

■ 0–1 ☐ 1–3 ☐ 3–10 ☐ >10

Benefits

Reducing methane emissions was an associated benefit of the project.

Methane Emissions Reductions

Casinghead gas varies widely in production rate, pressure, and composition. Methane emissions reductions are based on a wellhead producing 180 Mcf per day of salable associated gas that is 50 percent methane. One partner reported installing four compressors and capturing 225 Mcf per day of methane (total 675 MMcf per year associated gas).

Economic Analysis

Basis for Costs and Savings

Methane savings of 32,850 Mcf per year are based on recovering 180 Mcf per day of associated gas containing 50 percent methane, by installing a 30 horsepower electric rotary compressor capable of delivering gas into a 100 psig sales line.

Discussion

This technology has a quick payback. Capital cost is estimated at $12,500, with installation assumed to be 1.5 times equipment cost. O&M costs are primarily electricity, estimated using the following formula: O&M = engine horsepower * OF * electricity cost, where the price of electricity is assumed at $0.075 per Kwh, and the operating factor (OF) at 0.5.